

University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH OCTOBER 1, 1979

- **Farm Education for Rural Development**
- **Physics in Indian Universities**
- **Effective Model of Non-formal Education**
- **Universities Facing the Future**
- **Role of Agricultural Faculty**
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**INDIAN INSTITUTE OF TECHNOLOGY, KANPUR
(RECRUITMENT SECTION)**

Advertisement No. 28/79

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Sl. No.	Name and scale of the post	No. of posts	Prescribed Qualifications
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4.	Mechanic GR. 'C' for Central Air Conditioning Plants for the Institute buildings and the ACMS building in the scale of pay of Rs 260-6-326-EB-8-350.	Three (Likely to be increased to five) (Out of three, one post is reserved for S.C. candidates)	<p>Essential High School plus I.T.I. certificate in Air Conditioning and Refrigeration.</p> <p>Desirable Candidates having above qualification with two years' experience in handling large capacity Air Conditioning Units.</p>

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place of duty to Kanpur and back by the shortest route.

Applications for the posts of Assistant Librarian and Senior Technical Asstt. must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed unstamped envelope of 25 cm x 10 cm- size and for the posts of Library Assistant and Mechanic Gr. 'C' should be made on plain paper, stating date of birth, qualifications, experience, pay and present scale of post now held and other particulars.

Applications for the post of Assistant Librarian and Senior Technical Assistant should be accompanied by an

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Applications should reach the Registrar, Indian Institute of Technology, Kanpur-208016 on or before **October 15, 1979.**

**S.N.D.T. WOMEN'S
UNIVERSITY**

**1, Nathibai Thackersey Road
BOMBAY-400 020**

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Qualifications and Experience

(a) Doctor's Degree or research work of an equally high standard in one of the subjects under Arts or Social Sciences.

(b) A consistently good academic record at the Master's level with at least first or high second class or equivalent degree of a foreign University, preferably in a subject under Arts or Social Sciences.

(c) About 10 years experience of teaching and/or research and about 5 years administrative experience at an educational institution of higher learning. Experience of guiding research at doctoral level and organising extension work will be considered added qualifications.

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Senior Scale

Rs. 1,500-60-1,800-100-2,000-125/2-2,500-+ admissible allowances (Total initial emoluments about Rs. 2,000/- per month).

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Note

(1) Only suitable candidates will be called for interview.

(2) Other things being equal preference will be given to candidates belonging to Scheduled Castes/Tribes and other Backward Communities.

(3) Scale will be offered keeping in view the qualifications and experience of the candidates.

(4) Proficiency in Marathi essential, besides fluency in English.

(5) Higher starting salary may be considered in exceptional cases; if recommended by the Selection Committee.

(Smt.) Kamalini H. Bhansali
REGISTRAR

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Hony. Editor : ANJNI KUMAR

Farm Education for Rural Development

B.V. Venkata Rao*

In the years after independence, there has been an enormous increase in agricultural education and research activities involving a huge annual financial outlay of the order of Rs. 200-300 crores. We have presently 22 Agricultural Universities and a sizeable number of Agricultural Colleges outside of their purview in some states.

In terms of potential for agricultural production, we have soil, water, plant and animal and human resources which compare favourably with those in any other developed part of the world. In spite of all these, more than half of our people are below the poverty line, unable to secure two square meals a day.

This mis-match between resources and quality of lives of people is largely the result of lack of relevance of our educational programmes to the needs of rural masses. How the curricular content of agricultural educational programmes could be modified to be in harmony with the problems that confront the farmers in their agricultural enterprise is the question.

Crop and animal production constitute the two basic aspects of agricultural activity. To understand the phenomenon of living organism whether it be a plant or an animal, a sound knowledge of environment, physiology, nutrition, genetics, health and finally husbandry and processing of products therefrom is inescapable besides micro and macro socio-economic of these production processes.

The broad categories for which College Graduates would be required are (i) agricultural extension and rural development administration (ii) management of private and state farms, (iii) input, marketing and credit services (iv) planning, executing and evaluation of projects and (v) higher education, research and advisory functions.

The professional training for agricultural extension and rural development functionaries requires comprehensive programmes of teaching in general agricultural with not too much emphasis on specialisation. A sound knowledge of production processes and techniques with appropriate emphasis on socio-economic aspects would be adequate, while the training for those who go into research or teaching requires high level specialised knowledge.

The time of a student in an agricultural college could be more productively used in studying agricultural subjects, if the level of instruction in basic subjects like chemistry, botany, zoology, physics and the like taught in the pre-university courses are

(Continued on page 506)

University of Agril. Sciences, Bangalore.

Physics in Indian Universities

B. M. Gupta*

P. R. Bose

Introduction

For the formulation of any scientific policy, it is necessary to have sufficient information on resources on personnel, equipment, funds, etc. Since the collection of this information is not well organised in developing countries, the task of science planners in these countries have become more complex and difficult. The spectrum of work of these planners range on one hand to settle the inter-sectoral priorities to the balance determination between basic and applied research, on the other hand. They are also to deliberate between the choice of disciplines to be emphasised. Between individual disciplines, how best to draw a line of distinction between classical areas and new emerging areas, etc. Infact, quantitative studies in science policy go a long way in assisting science planners to arrive at a rational decisions about problems confronting them. The present paper is a modest attempt to look at quantitative assessment of physics research efforts in Indian Universities. In any study of this nature the formidable difficulty is in collecting reliable information. Since no readymade statistics is available on the physics research output in India, we have relied on the data available in Physics Abstracts for 1973.

R&D activities

The resources devoted to science and technology in India have expanded considerably during the last three decades following the independence. The expenditure on R&D and related activities have increased from a marginal figures of Rs 1.10 crores in 1948-49 to well over Rs 448.13 crores in 1976-77. During the years 1975-76 and 1976-77, about 89% of the expenditure was incurred by government sources and the rest by private sources. Research in the university sector is mainly financed by University Grants Commission besides Central and State Government depending upon affiliation. There are also agencies like Department of Science and Technology (DST), Council of Scientific and Industrial Research, ICMR, ICAR, Department of Atomic Energy & Space, INSA which also provided funds to the researchers by way of fellowships, grants, etc to support projects in their own priorities areas. University Grants Commission, of late has been making concentrated efforts to promote research in the universities. Besides project based support to individual research works, the Commission also provides the core support for research to every University. The Science Council was set up in early 1974 to advise U.G.C. with regard to the development of scientific research. However, the amount of money devoted to University sector in R&D is very small in relation to R&D funds provided in other sector.

Very little reliable information is now available about expenditure in universities that could be regarded as falling in the category of R&D outlays. However, the grants made by UGC for research and advanced study in the science, research fellowships, etc has been estimated to have increased from Rs. 2.51 crores in 1974-75 to Rs. 5.45 crores in 1976-77. Even no detailed estimate is available about the possible breakdown of R&D expenditure in university sector subject-wise.

Growth of Physics departments in universities

In our country, physics research is carried out under the auspices of institutes under central government and state government, industrial houses and research associations; and universities and colleges. However, a major component of the research is carried out in the academic sector mainly universities. At present there are about 150 universities besides 10 institutes deemed to be universities and 5 IITs. In a cyclostyled directory prepared by UGC in 1975-76, it has been indicated that there were 79 universities which have established physics departments by 1975-76 but information regarding the year of establishing of these departments is provided only for 69. Taking the growth of physics departments in Indian universities, one finds that there are 13 universities which have established their physics departments until independence.

Calcutta, Banaras and Aligarh were the first three universities, establishing their department upto 1920, followed by Lucknow, Allahabad, Delhi, Indian Institute of Mines, Osmania and Annamalai in 1920's. However, the growth in 1930's was very slow, and Andhra and IIS, Bangalore were the only two universities, establishing their physics department in this period. After independence upto 1957, the growth of physics departments were slow, and on an average, there was addition of one department per year. This was the period when the major expansion in the university system took place. After 1962, a major expansion of physics departments took place and about 18 departments were established during 1963-67. This was the period, when UGC was set up a slightly earlier, which provided the basic support and encouragement. Also at this time, UGC was headed by a famous physicist Dr D.S. Kothari. It is because of his vision that necessary support was provided to the support of science activities in the universities. Because of basic foundations laid by Dr. Kothari, physics research continued to get necessary support. As a result, one finds that the growth of physics departments almost grew at same pace as one can see in the period mentioned earlier. In 1963-67 and 1968-72, the number of physics departments set up were 11 and 14 respectively.

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Contribution of papers by various universities

In all 2303 publications are published in physics research in India, out of which a major portion 1616 have come out of academic sector. Within the academic sector, 1412 papers came out of university departments only. In Table 1 (given at page 501) is provided the cumulative growth of publications from various universities. There are although large number of universities engaged in physics research, bulk of activities is concentrated only in few universities. About 50 per cent of contribution to the university output is made by 7 universities alone. These are: IITs at Kanpur, Madras, Delhi; Allahabad; Banaras; Delhi; and Indian Institute of Science, Bangalore. The largest contribution is made by Banaras Hindu University with 193 papers. For the purpose of discussion, we can divide the above universities into two categories. In the first category comes all the universities other than IITs which are very old and have established their physics departments in the early 20's and 30's. They have by now established large and good research groups. In the second category comes the IITs, which are comparatively much new and established the physics departments in 60's and 70's. The large number of publications from these universities is mainly because of the availability of more resources in terms of money, qualified manpower, comparatively better research environment and faster mobility of scientists.

Subject-wise distribution

In this section, we will discuss the distribution of paper subject-wise. Since we have taken all our data from the analysis of contents of Physics Abstracts, we found it convenient to take the subject classification provided by Physics Abstracts as our base for analysis. Under this classification, the whole of physics has been divided into 8 broad sub-areas and seven inter-disciplinary sub-areas. In Table 2 (given at page 501) is provided the broad subject-wise distribution of university output. The largest number of papers have been contributed by the "Condensed Matter" sub-area, forming about 30 per cent of the total university physics output. This is quiet in tune with the large output of this area at both national and international level. The large output of this area at both national and international level is because of number of reasons. Firstly, study of properties and structure of materials under different conditions is of interests to scientists, engineers and technologists and have direct linkage with economic development in a country besides of immediate application. This area offers a wide scope and flexibility in research on new materials, alloys or substances which can be studied for various type of properties by using different types of instruments. It has wide applications in diverse fields like space and nuclear, physics, electronic devices, plastic, etc. Research activity in this area is rapidly increasing during the last few years. In majority of the universities, there are groups, big and small, working both in theoretical and experimental problems. At present this area is the most popular area of research in the country.

This can be seen from the fact that out of 65 universities contributing to the total university output, 50 also participated in research in this area. There are about 13 major groups in these universities in this area. Notable among these groups are those with output: Banaras (60); Allahabad (51); IITs at Delhi (44); Madras (43); and Kanpur (30); Andhra (27); Delhi (21); Roorkee (21); Lucknow (19); IIT at Kharagpur (14); Baroda (10) and SV University (10) in the decending order. Major emphasis of work in the area seems to be areas such as: optical materials and condensed matter spectroscopy (78 papers); lattice dynamics (77 papers); crystallography (70 papers); Transport Properties (45 papers); Mossbauer effect (39 papers); and dielectric properties and materials (34 papers), etc.

Gases, fluid dynamics and plasmas constitute the next active area in physics research in universities contributing more than 13 percent to its output. Major areas of current emphasis are fluid dynamics (13) and plasma physics (49). Considerable portion of the research in this area can be carried out theoretically. For example evaluation of characteristics of plasmas can be studied under wide range of conditions. This can also be checked with experimental data later on. The relevant data in this area to be collected requires the facilities of balloons, rockets, etc. During the last few years, increasing facilities have been provided to Indian scientists in this area, which had made possible such large number of publications. Several groups in the universities numbering 27 have been engaged in research in this area. Notable among these groups are with output: Banaras (31), Indian Institute of Science, Bangalore (15), IIT, Bombay (13), IIT, Kanpur (11), and Rajasthan (10).

Work in atomic and molecular physics has been in progress in many universities from the beginning of scientific research in the country. Infact, this is by far one of the oldest and most common areas of research after condensed matter in the country. As a result we find that 30 universities have groups engaged in the research in this area. Soon after Raman effect was discovered, many schools sprang up in universities in this area. This was one of the areas in which pioneering work was done not only by Raman and his co-workers but also by his students and grand students. Because of its old tradition, it has produced maximum number of Ph. Ds in the country. Research in this area is very flexible and mostly of theoretical nature. This area has contributed about 11 percent to the total university physics output. Notable among the groups working in this area are those of Banaras (43), Delhi (15), Allahabad (15), Gorakhpur (14), IIT, Kanpur (7), Annamalai (9). Major concentration of research is area of molecular physics contributing 146 out of 184 in this area.

Research in the area of mathematical physics is mainly of theoretical nature and requires mathematical knowledge and skill. This area contributes about 8 percent to the total university physics output. Major emphasis of research seems to be traditional

areas like classical mechanics (57), relativity and gravitation (23), statistical physics and thermodynamics (15). Research in the area is although scattered in large number of mathematics and physics departments, but there is no major concentration of efforts. The two larger groups in this area as identified by our data are at Indian Institute of Science, Bangalore (16), and Indian Institute of Technology, Madras (10).

The organised research in nuclear science began in India with the founding of Tata Institute of Fundamental Research. This institute became the cradle of India's atomic energy programme. As the work in atomic energy expanded, scientists were moved to Bombay, where a separate unit—The Atomic Energy Establishment was set up in 1954, later changed its name to Bhabha Atomic Energy Centre in 1967. Today it is one of the largest centres of nuclear research in the country. Most of the research is concentrated in research institutes, but some basic nuclear physics studies are conducted at universities also. Research in the universities is mainly lagging because of the non-availability of equipments like big accelerators. In case of theoretical nuclear physics also, the limitation is that theorists need experimental data churned by machines, for every meaningful systematization of their ideas. As a result, due to paucity of gigantic experiments in the country, researches had to depend on data produced elsewhere. This area contributes more than 5 percent to the total physics output. Major concentration of research is in areas of the study of nuclear structure (48) and nuclear reactions and scattering (53). Hardly any large research groups exist in universities although many universities are coming forward to undertake research in this area. More recently, conscious efforts have been made in the country to develop viable groups at Andhra, Calcutta, Aligarh, Delhi and Punjab, etc.

Elementary particle is another theoretical area of nuclear physics where some work is going on the university sector, contributing slightly more than 5 percent to the total research output in physics. The research activity in this area is of relatively recent origin. The level of research in this area is of very high order in the country; and is comparable with any country in the world. Concentrated efforts were made at TIFR in late fifties to develop and collect a viable groups of students in this area. More recently, conscious efforts have also been made to develop such able groups at Delhi, Kanpur, Jadavpur and Madras.

The other branches where the noticeable amount of work has been published are: Geophysics and earth science (88), electromagnetism and optics (47), materials science and metallurgy (43), astronomy and astrophysics (25) and general physics (58). Among sub areas of geophysics and earth sciences, about 30 percent of work is reported on ionosphere with 27 papers. The other important areas are devoted to the study lithosphere (16), low atmosphere and meteorology (12), upper atmosphere (10) and geophysical instruments & techniques (10), etc. In case of electromagnetism and optics research efforts have been con-

centrated in areas namely optics (19), particle beams and particle physics (13). In sharp contrast to this, research in the area of astronomy and astrophysics has been scattered in large number of areas namely theoretical astrophysics (8), solar systems (7), stars (5) etc.

Media and place of publication

To measure, where the scientists publish, is an important indicator of strength of research. In Table 3 (given on page 501) is provided geographical distribution of papers published by Indian scientists. It is observed that a major portion, 64.8%, of the University output is published in foreign journals. There are number of reasons why Indian scientists prefer to publish in foreign journals. These are: (i) reference assessment in objective and helps the author in improving his manuscript; (ii) better and quick coverage in national and international abstracting/indexing/current awareness services; (iii) high standard (iv) better circulation, (v) availability of specialised and letter journals etc. In our data among foreign countries, the largest number of papers are published by Indian physicists in United States and United Kingdom. Journals published from Netherlands, West Germany, Switzerland, Italy and Japan serve as a media for considerable number of contribution emanating from India. Among the foreign journals the major Indian contribution is published in journals: Pure and Geophysics, Netherlands; Journals of Physical Society of Japan; Phys. Status. Solidi; Physics Review (various sections); Letter Nuove Cimento; Acta Crystallogr. A; Chem Phys. Lett.; Journal of Physics (All sections), etc. Among the Indian contribution, more than 50 percent is published only in 7 journals. There are Indian. of Pure & Applied physics; Indian J. of physics; Indian J of Meteorology and Geophysics; Current Science; Indian J. of Pure & Applied Mathematics; Indian J. of Radio & Space Physics, Proc. of the Indian Academy of Science.

Summary

There are few observations which need to be highlighted in this small survey. Firstly it is observed the output of publications from University sector is very large as compared to the research institutes in the country. On the one hand, the funds allocated to universities are very small in comparison to research institutes. In fact, we cannot strictly compare the outputs from these two varieties of institutes straight-away because research output from research institutes comes in other important forms also like through patents, reports. However, comparison of papers do provide some idea about this gap. Secondly, one finds that major portion of the work in the universities is of theoretical nature and has little practical application. Thirdly, in selecting media of publications, the scientists prefer to publish at large number of their paper in foreign journals. This means that some steps should be taken to strengthen the Indian journals so that their best research contribution can be attracted in Indian journals.

Table 1
Cummulative contribution of Papers from Various Universities

Range of Papers	Number of Universities	Number of Papers	Cummulative Number of Papers
150-199	1	193	193
100-149	1	101	294
75-99	5	419	713
50-74	1	72	885
25-49	8	294	1079
15-24	6	111	1190
10-14	7	84	1274
5-9	13	87	1361
Less than 5	23	49	1410

Table 2
Subject-Wise Distribution of Papers in Universities

Area	Number of Papers	Area	Number of papers
General Physics	58	Interdisciplinary Areas	
Mathematical Physics	111	Material Science & Metallurgy	43
Electromagnetism & Optics	47	Physical Chemistry	11
Elementary Particle Physics	76	Geophysics. Earth Science	88
Nuclear Physics	73	Cosmic Ray	3
Atomic & Molecular Physics	184	Astronomy, Astrophysics	25
Gases, Fluid Dynamics & Plasmas	185	Biophysics	1
Condensed Matter	502	Applied Acoustics	5
			Total 1412

Table 3
Geographical Distribution of Publishing Activity of Scientists in Universities

Country	No. of Papers	Country	No. of Papers	Country	No. of Papers
India	496	Denmark	24	Turkey	5
U.S.A.	236	Canada	15	Hungary	4
Great Britain	223	France	14	Israel	3
Netherland	106	Poland	10	Australia	3
Germany	100	Austria	7	Spain	2
Japan	55	Czechoslovakia	6	Sweden	2
Italy	46	Yugoslavia	5		
Switzerland	45	Romania	5		
			Total	1412	

Developing an Effective Model of Non-formal Education

Motilal Sharma*

Non-formal education

The relevance of education to rural development was fully recognised at the Pan African Conference held at Kericho, Kenya, in 1966, as the following quotation from Sheffield (1977) makes clear :

"One of the chief tools with which to achieve..... rural transformation is education and training in their many forms—as much the education of the adult farmer in new techniques and attitudes, as much training in co-operation and the management of credit, as much the education of women as the education of children and adolescents in formal schools and universities..... a more significant contribution to rural development can be made by a strengthened, more clearly thought out and effectively co-ordinated educational service to adults, than by alterations in or expansion of the existing systems of primary and secondary schools."

These observations are further strengthened by the thesis propounded by Schultz in his presidential address to the American Economics Association in 1960, when he said that 'unexplainable' economic outputs could be accounted for by investment in human capital", presumably largely through education.

Such is the importance of 'education' component in human life and national growth. On the other hand illiteracy is a growing problem in today's world. It has been estimated that there are 110 million more illiterates in the world today than there were in 1951. The majority of that increase has occurred in the developing world (Ward and Herzog, (1974). This poses special problems for nations including India that are struggling for development. In India the literacy percentage is as low as 30%. Some thinkers assume that literacy is a necessary precondition for development whereas there are educationists who recognise that illiterate populations are very capable of learning what they need to know to adjust and contribute to development even though they cannot read yet. Ward and Herzog (1974) state that 'unless lesser developed countries can break out of the 'literacy first' perception of education, they are dooming huge percentages, and often increasing numbers of their citizens of continued ignorance, powerlessness and poverty'. We do not deny that 'literacy is a useful skill for people in the process of development. But, we do deny that reading is the only way to learn the knowledge and skills necessary for development. People who cannot read can develop and

achieve maturity and leadership capability if knowledge is made available to them through modes and channels which do not require prior literacy skills among the learners. This situation demands development of instructional experiences which will *effectively communicate* knowledge necessary for development to people illiterates, semi-literates, and educated simultaneously. It warrants for an integrated effective system of learning which provides opportunity for all three modes of learning, i.e. (i) informal ; (ii) formal ; and (iii) non-formal, and flexible learning environment. Coombs and Ahmed (1974) equate education to learning. I intend to agree with this view. Coombs and Ahmed (1974) define Non-formal Education as : "..... any organised, systematic, educational activity carried on outside the framework of the formal system to provide selected types of learning to particular sub-groups in the population, adult as well as children". La Bella (1975) says that "Non-Formal Education refers to organized out-of school educational programmes designed to provide specific learning experiences for specific target populations." La Bella does not treat three modes of education as discrete entities but he treats them as modes of emphasis or predominance. Illich (1970) and Freire (1970) conceived of Non-formal Education as anti-formal education, although in two different senses. In response to this ideological attack over loaded with anti-schooling bias Bock and Papagianis (1973) noted that 'non-formal' suggests that there is very little or non-formal structure; it suggests a highly participative, non-hierarchical and spontaneous learning environment where all participants are both teachers and learners... Grandstaff (1973) views Non-formal Education as a major new component in nation-state development.

It is obvious from the observations given above that non-formal education system could be seen as a planned instructional design to create a more flexible environment for the learner to teach towards a goal determined in consultation with the learner. This gets further support from Case and Niehoff (1976) where they say that 'non-formal education is a deliberate process of communicating ideas and developing skills in adults and out-of school children which will help them increase agricultural production, qualify them for, or increase their performance in, positions in government, industry and commerce, attain higher health standards ; participate more intelligently in civic, economic and political groups; and achieve other personal and social goals. The types of activities are extremely varied, highly focussed

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on specific learning objectives, and of varying duration. Thus we can say that 'non-formal education is education by objectives'. It could be said that Non-formal Education focuses on improvement of social and personal living, occupational capability and vocational competency. It aims at sociopolitico-economic growth of individual as well as nation. It is more flexible and the learning environment is more characteristic of out-of school learning. It is deliberately planned with a motive to bring educational opportunities closer to the people and to open more alternatives to formal schooling experiences. It allows the aspirations to formal schooling experiences. It allows the aspirations of the participants to function as powerful formative elements in programme planning and design. There is emphasis on low per capita instructional cost. It is need centred and could be defined as 'learning by objectives'. Added to this 'conscientization' the concept given by Freirs is another important element to be considered in context with NFE Platt (1976) emphasises the importance of 'conscientization' and says that I would offer that 'initial learning systems' are designed to help people to evolve out of dependency, to master the ability to learn, and to acquire skills to participate in the life and work of their communities. In fine one could say that non-formal education is an active, critical, dialogical educational programme which aims at helping new to learn help themselves, to place them consciously critical confrontation with their problems. Thus it aims at increasing their ability, by helping all human beings to rise from the status of object (oppressed) to the status of subject to perceive the challenges of their time and encounter with the same. Thus, developing integrated authentic human being is THE aim of NFE.

Systems approach to non-formal education

The systems concept provides a framework for visualizing internal and external environmental factors as an integrated whole. It allows recognition of the proper place and functioning of sub-systems. The degree of 'wholeness' makes the whole something different from, and more than, the individual units considered separately. The way to look at the whole system is in terms of plan (organized from the interrelated components) where planning means laying out a course of action that we can follow, that will take us to our desired goal. Hence systems approach to problem warrants that a piece-meal approach is replaced by an overall approach. Barrow (1976) in his key-note address delivered at APLET international conference emphasised that physicians must have skill of dealing with 'total patient'. Systems approach is based on the concept of 'wholeness'. Systems approach interprets systems in 'wholeness terms'.

If one peeps into the expenditure incurred on education by different countries of the world during the last one decade, one will find that budget of education has increased significantly and it will certainly be higher in coming years. Even after spending too much money we have not been able to pro-

vide education to all children of school-going age. We have not been able to make all human beings literate. In some areas, we are facing shortage of man-power whereas in certain others, we find unemployment among the educated. Besides these global problems, we find our teaching methods ineffective and teaching unproductive. Students, parents, employers, leaders are not happy with the quality of education. Secondly systems approach is one of the techniques which aim to find the most efficient and economically intelligent methods. Again, it is not new to apply systems theory to education. Educational technologists Finn (1956), Hoban (1956) and Heinrich (1970) among others, have convinced us that we need to take a 'systems approach' to education. The concept like 'system' and 'systems Approach' have been frequently discussed in context with education by Bern (1967), Corrigan and Kaufman (1966), Basson and Heinrich (1966), Kaufman, Corrigan, Corrigan, and Goodwin (1967), Manch (1962), Silvern, (1968), Hayman (1974), Mitchell (1975), Winn (1975), Mitchell (1970), Banghart (1969), Lehanam (1968), Shoemaker (1972), Dederick and Saturage (1975).

First requirement of system specialist for planning for reordering of the existing system or planning a new system is detailed information about the system that exists. Many different types of data are needed. The quality and objectivity of the data collected and the form in which they are presented to decision-makers will deeply influence the systematic planning. Good data make possible continuing reformulation of sensible objectives and clear deliberation on the best means of achieving them. In case of planning Non-formal Education system following basic data will be needed:

- 1) Enrolment figures for all levels of education.
- 2) Percentage of drop-outs and repeaters at all levels.
- 3) Percentage of school age population not receiving any education.
- 4) Number of educated persons and skill specialists available in the community.
- 5) Number of qualified teachers available in that community.
- 6) Professional Training facilities available.
- 7) Inventory of school buildings and buildings that could be used for educational purpose in the community, instructional materials, equipment, estimates of utilisation rate.
- 8) Budgets available and budgetary constraints.
- 9) Adult (or continuing) education facilities, and estimated participation.
- 10) Adult literacy figures and information about each illiterate.
- 11) Vocational training statistics.
- 12) Shortage of skilled manpower in the economy.

Besides this the statistics, if they are to be useful in planning, must include enough information on the past and the future (projections for time to ten years ahead) to reflect populations trends, village to city mobility and changing economic and social requirements. Comprehensive data collection tends to high-

light all kinds of things that previously had been overlooked. Attempt may also be made at identifying the results of the existing educational system.

Resources....their allocation and use....are central to educational system planning. When planning a new educational system make sure of adequate resources. These resources could be categorised under (i) money, (ii) manpower, (iii) equipment/buildings and (iv) programme materials. All are essential in the right amounts of the right quality for the right period of time ahead if a new system is to succeed. It demands programme budgeting, which relates expenditure directly to objectives, and which groups manpower equipment, and buildings into functional programmes. With this background the author initiated the work of designing the present project.

Emergence of the project

The present project has emerged out of conviction. The Department of Education has been working in the area of NFE since 1975. Secondly, the author had, before designing this project, experience of working with NFE programmes being conducted in the rural areas in the State of Rajasthan and had already completed one project on NFE under Commonwealth Education Fellowship of U.K. Besides this his experience of working with Motilal Wadi in Surat (a Harijan Community) further strengthened his belief that the idea of NFE in *totality* warrants to be tried out in rural setting.

Furthermore, since NFE is relatively a new and emerging concept hence one cannot expect of availability of very many models of planning, implementing and evaluating NFE programmes. This further warrants an urgent need for developing systematic strategies which can help administrators in administering NFE programmes and can also help practitioners in implementing NFE programmes. All these experiences provided impetus to take up the present project which has been worded as follows:

“Developing an Effective Model of Non-formal Education for Rural Development: A System Approach”

Major objectives

Major aims of the project are:

- 1) To understand the relationship between non-formal and formal, informal modes of education in the rural context.
- 2) To develop a systems model for planning non-formal education which will serve the following purposes:
 - a) It will represent an exhaustive compilation of the planning and operational functions required of non-formal education facilitator and co-ordinator.
 - b) It will offer planning sequence of events that will enable systematic planning and predictability about the effectiveness of non-formal education programme.

c) It will provide necessary guidelines for planning, producing and evaluating learning materials and programmes for specified audience as per their requirements.

d) It will also provide guidelines for gathering, analysing, storing information needed for making planning decisions.

- 3) To develop a battery of evaluation tools for evaluation of non-formal education programme.
- 4) To develop a model non-formal education centre.
- 5) To study teaching and learning approaches which could be optimally effective for conducting non-formal education and developing instructional methodologies for non-formal education.

Initiating the project

1) Selection of village

Process of selection of a village for the proposed project involved a series of meetings of faculty members followed by an extensive planned contact programme under the leadership of Dr. G.B. Shah, Professor and Head, Department of Education, South Gujarat University, Surat, who is also Honorary Director of the project. Dr. K.V. Sheth, Co-investigator co-ordinated this contact programme. Under this programme the Principal Investigator along with the faculty members contacted many community leaders and voluntary agencies and visited quite a few villages suggested by different people. Suggestion for selection of the village Takarma came from quite a few people which was further strengthened by a meeting with Shri Jagjivanram (Das Kaka), Director, Sumul Dairy, Surat. Still, to take a final decision meeting with people of Takarma was essential. Secondly, we did not want to enter Takarma as foreigners. We wanted to enter Takarma as if we were *returning* to Takarma not as if we were *reaching* Takarma. Hence public relations programme was initiated and Dr. Sheth sent a large number of letters to community leaders of different castes and sections saying that we wanted to meet them with a purpose to initiate few activities in the village wherein we would like to work *with* them. This was followed by a series of meetings with village people mostly in informal sittings. Director of the project along with the project team participated in these meetings. By this time one of our Research Fellows Miss Ansuya Sheth had joined us. These meetings gave us a feeling that there is organizational potential available in this village. Though there are small interest groups but there is possibility of bringing them together to work for the development of the village as such.

Furthermore the level of awakening in this village is low. The village, geographically, is situated away from town or city and, really represents village setting and provides adequate scope for experimentation. These observations also supported selection of Takarma for the purpose of our project.

Experiences gathered in the meetings cited above were discussed at length in the meeting of our faculty members and final decision to select Takarma for our NFE project was taken. After this, a general meeting of the people of Takarma was organised under the Chairmanship of Professor A.R. Desai, Vice-Chancellor of the South Gujarat University, who takes sincere interest in community based projects, on 2nd October, 1978 which was attended by almost all people of Takarma and the project was inaugurated.

Progress of the project

(1) Village survey

This phase included two steps: (i) collection of demographic information about the village; and (ii) door to door survey. To complete the first step two survey blanks were prepared. (i) demographic data blank, which was filled by 'Talati-cum-Secretary' of Gram Panchayat, and (ii) village needs assessment questionnaire which was filled by village leaders (i.e. Sarpanch, etc.) and community leaders. It would not be out of place to give an overview, in brief, of the results of the survey mentioned above. Takarma is about 30 kms. away from Surat. Its population is 903 which is distributed over 142 families. These 142 families include 3 Muslim, 55 Halpati, 6 Harijan, 15 Rajput, 2 Brahmin, 1 Bania, 3 Desai and 55 Patel families. Halpaties are landless labour and 98 per cent of them are illiterate. The village has a milk co-operative. There is no industry in the village. There are only three skilled workers viz. one tailor, one wireman and one mechanic of tractors in the village. Agriculture is the major occupation of the village population. A few people are also engaged in diamond cutting industry and yarn industry based at Surat. There is one primary school in the village and a secondary school outside the village at about a distance of 1 km. Students from about 16 villages come to this secondary school. Primary Health Centre is in Arthan village which is at a distance of 2 kms. from Takarma. There is no drinking water facility in the village. Condition of streets and sanitary conditions of the village are very poor. As has already been stated that the people of the village are interested in the development of the village. They would be interested in participation in the programmes directly related to the immediate problems of the village such as drinking water, village sanitation, health and hygiene, improved agriculture, training in diamond cutting, education, and programmes related to economic development of the village. To supplement the data regarding village needs assessment, interviews with community leaders are being conducted. These interviews have dual purpose (i) gathering more information, and (ii) creating an awakening among the people that they should know their problems and their potential to encounter the same. This will help in developing programmes with the help of villagers because our philosophy is to work with the village people instead of working for them.

(2) Door to door survey

It has been an intensive family survey. Family

survey blank was prepared and administered to each family. Students from the secondary school were also involved in conducting door to door survey. Research staff visited each and every family individually and spent some time with each family for completing the blank and getting acquainted with each family. Survey has been completed and the data are at processing stage.

(3) Family health survey

Family health survey blank has been developed by the project staff in consultation with medical experts. For conducting this survey a few medical practitioners were contacted and two of them agreed to offer their services voluntarily for conducting this survey.

(4) Literacy survey

Research tools for conducting survey to assess political, economic and social literacy in the village are being prepared.

(5) NFE centre

One NFE Center has already been established in the halpati community. Two more will be established very shortly.

(6) Programmes to be initiated

Firstly, the nature of the programmes to be introduced will depend on the analysis of data collected for identification of village needs and from door to door survey. Secondly, programmes as such will not be supplied by the project staff but will be identified and developed with the help of village people. Continuous dialogue with village people with major objective of increasing participation among village people would be used as base for developing programmes. On the basis of our limited experience with the people of Takarma it could be said that the programmes may be related to setting up 'Dialogue Group' (for men and women) introducing 'News-paper without Paper', initiating structured consciousness raising programme, introducing literacy, health education, improved agriculture, rural family welfare programmes. These programmes in future may emerge into the form of special programmes like Human Physiology, Good Habits for health, Health rules for children, Mother and child protection, Planned Parenthood, Religions in India, Indian Culture, Road Safety, Training in organisation, world beyond earth, Saving and Investment, Language learning, Health and Nutrition, Learning to construct a Latrine, Diseases Transmitted by Insects, First Aid, Vaccination, Leadership Training, Building a New Future for Takarma, we work together for the progress of Takarma and so on. Besides this, programmes aimed at special skills will also be initiated which may include Diamond Cutting, Spot Welding, Identifying Electric Circuit faults, Your Driving Habits, Cycle Repairing, Improved Farm Tools, etc.

(7) Development of systems model

Tentative flowchart designs of the model proposed to be developed have already been designed. Now it will be tried, first, in simulated situation and then in the field.

(8) Development of instructional materials

Instructional materials will be developed by the project staff as per needs of the programmes from time to time. Use of Audio-visual aids will be encouraged. Radiovision programmes will, if needed, be developed and used for education, as well as for conducting consciousness raising groups by establishing 'Radiovision Groups'. Task analysis and trait-treatment analysis will be done for taking decisions with regard to type of instructional materials to be developed.

(9) Problems

The main academic problem at the moment is of developing communication pedagogy for establishing effective communication system between the project staff and the people of Takatma. Besides this, it would not be legitimate on my part to discuss problems of participation, response and initiative on the part of village people as problems because they are to be solved with the help of this project. But I would certainly like to invite the attention of N.C.E.R.T. authorities towards its financial aspects. The project has been sanctioned for pilot study. The project is not laboratory based. It is community based and has to be piloted in field. Besides this the nature of the concept of NFE is such that in strict sense variables cannot be controlled and parameters can not be strictly specified for the total period of the

project. The project is concerned with helping a community to help themselves for their development as a group and also as individuals. Here, development includes all the dimensions viz. economic, social, cultural, political, educational, technical, etc. It makes it doubly difficult to define the range of programmes to be introduced and specifying the same in the beginning. As the project marches ahead and the programmes develop the financial requirements changes. Besides this, one of the aims of the project is to develop a systems model which could be used for planning NFE programmes for different target groups. This again demands development of a range of research tools. In fine, the project includes development of programmes, research tools, instructional materials and simultaneously study of development of the community under the project. Looking into this situation one can realise that two junior research fellows with very limited funds are not sufficient for conducting such a project. This project is a developmental cum research project to be conducted in real world situations, hence it should have been provided adequate staff and adequate financial assistance. Thus the main problem is of manpower and finance. If the limit of expenditure on this project could be raised from Rs. 20,000/- to Rs. 50,000/- for the pilot phase it would facilitate us to conduct the project more effectively and produce systems model which has been proposed to be prepared. □

Farm Education for Rural Development

(Continued from page 497)

sufficiently high, and the agricultural instruction starts straightaway at entry into the College.

The undergraduate programmes in agriculture are more or less uniform. The instruction starts with basic and then applied subjects with or without any specialisation, extending over a period of four years. It is obvious that relationship between what a student has been taught and the knowledge and training needed in agricultural production would be meaningful only when the student has been involved in personal field production activities carrying sufficient academic credit.

All agricultural institutions whether they teach crop or livestock production should have field class facilities in selected centres. It should be thinking with hands and not getting lost with blackboards and class notes. The class room should serve as an adjunct to field study. It is a methodology wherein teaching is built around practical situations whether

it be in respect of crop or animal raising. The institution provides inputs and substantial part of the profit made would go to the student for the work he puts in.

At least the first two years of the four-year course should be work and production oriented in different aspects of agriculture. This practical exercise would be accompanied by courses on the management of major crops and livestock and close study of crop and animal agriculture around the production centre, through visits and work association. The grading would be on the basis of students' field performance and their attitude towards farming and service to rural people.

Through this production training the student gets an integrated training in agricultural production relevant to needs of rural people. The success of such an integrated programme is directly linked to the committed participation of the teachers and administrators of the agricultural educational institutions.

[Courtesy : The Hindu]

Seminar on universities facing the future

A two-day seminar on 'Universities Facing the Future' was organised in New Delhi under the joint auspices of the University of Delhi, the Jawaharlal Nehru University and the Sri Aurobindo Centre. The seminar was inaugurated by the Union Education Minister, Dr. Karan Singh.

The objective of the seminar was to bring together experts of different disciplines with a view to understanding the problem in a meaningful way. The main theme of the seminar was divided into four topics: (1) Re-casting educational priorities in science and technology; (2) Re-casting educational priorities in Humanities; (3) Re-casting priorities in social sciences; and (4) Re-casting priorities in management and techniques of the universities to

the impoverished people from various kinds of socio-economic exploitations and psychological constraints and making their quality of life richer. He emphasised that more attention should be paid to course content rather than structure of education. The content of courses should be made more rich aesthetically and spiritually to meet the evolutionary needs and aspirations of the learners.

Dr. D.S. Kothari, former Chairman of the University Grants Commission, said that our educational system did not enable the learner to acquire self-confidence in himself and faith in the future of the country. Our educational content of courses must be in harmony with our living dynamic cultural heritage.

Dr. Sarup Singh, former Vice-

that had been assigned to them and to build up leadership. Dr. Rao said that the teachers of an agricultural university were embodiment of total agricultural development. He urged the teachers to examine the quality of research programme, operational efficiency and total commitment to public service. He also advised the teachers to develop centres of excellence in APAU and also to plan and execute innovative programme for the benefit of the community.

Explaining the role of the teacher in the present day context, Dr. T.M. Vittal Rao, Head of Agricultural Chemistry and Soil Science Department of the university said that there was a crisis of education and this needed to be squarely met by the teachers. He asked the teachers to face the grave challenge and take up the opportunity to shape the students into a social asset. He advised the teachers to provide the best in them for the benefit of the taught and called upon them for optimum utilisation of the limited resources and existing facilities to provide education to those who had not had an opportunity for formal education in colleges and universities.

CAMPUS NEWS

meet the present and foreseeable needs of the future.

Inaugurating the seminar, Dr. Karan Singh stressed the need to have a holistic approach to the problem. He said that the present fluid situation in the world was partly the result of our inability to achieve a balanced development between the scientific and technological breakthroughs of the 20th century and the growth of human consciousness. Referring to university education, the Minister said that there was need for inbuilt flexibility in the system so that it should be more responsive to meet the present and foreseeable environmental and evolutionary needs of the individual and society. He also urged the need for giving a top priority to non-formal and adult education programmes for emancipating

Chancellor of Delhi University, Dr. R.C. Mehrotra, Vice-Chancellor of Delhi University, Dr. S.K. Mitra, Director, NCERT, Prof. M.V. Mathur, Director, National Institute of Educational Planning and Administration, were among those who spoke at the seminar.

Special role of agricultural faculty

Speaking at the Teachers' Day celebrations of the Andhra Pradesh Agricultural University, Dr N.G.P. Rao, Professor & Head of National Research Centre on Sorghum stressed the need to build up and strengthen effective relationship between the teachers and the taught for mutual benefit. He called upon the teachers to dedicate themselves to the cause

Role of varsities in adult education stressed

The NSS Unit of the Patna University organised a two-day seminar to discuss the role of higher educational institutions in successful implementation of adult education programme. Inaugurating the seminar Dr K.N. Prasad, Vice-Chancellor of the university said that the energy of the university students should be tapped for imparting education to the illiterate. He emphasised the need for practical education to farmers and rural folk through radio, television and other mass media. He added that the success of the programme depended on the revolutionary zeal of workers and the institutions associated with it.

It was also observed at the seminar that universities and colleges could act as motivators and extend their cooperation in the

preparation of reading materials for adult learners. Persons associated with universities and colleges could utilise their off-hours in educating the illiterate adults of their respective areas.

The programme officers of NSS of different colleges, university teachers, representatives of various voluntary organisations and administrators attended the seminar. Dr. D.P. Singh, former Vice-Chancellor of Bhagalpur University, presided over the valedictory function.

Need for guidance to students

The Employment Information and Guidance Bureau of the Osmania University organised a seminar-cum-orientation course for teacher liaison officers in Hyderabad recently. Inaugurating the seminar, the Vice-Chancellor, Prof. G. Ram Reddy, emphasised the need to guide the students in reading and the preparation for competitive examinations.

Mr B.N. Waghray, Director of Employment and Training, who presided, stressed that the activities of the Bureau should be made known to all students of colleges and the liaison officers attending the seminar should be able to do this. He suggested that the students should be guided in facing interviews with the employers.

The various topics discussed at the seminar were concerned with educational and vocational guidance and about 65 lecturers representing the various colleges attended the seminar. Justice K. Madhava Reddy delivered the valedictory address.

Seminar on role of language

A seminar on role of languages in a developing society was organised at the Central Institute of Hindi at Hyderabad recently. Inaugurating the seminar, Dr. Moturi Satyanarayana, an eminent Hindi scholar, said that language was no longer a preserve of the elitist society but had different roles to play to fulfil the needs of a modern society. He

said that all languages of India had roles to play in building good society.

Dr. G. Ram Reddy, Vice-Chancellor of Osmania University, pointed out that politics had been mainly responsible for the language controversy in the South because Hindi had been accepted by all as a link language before independence. He was however optimistic that the present antagonism against Hindi would die down its natural death as it was perpetuated by a small number of disgruntled politicians. Nobody would deny the necessity of having a common link language and all state languages could not become link language at a time.

The Union Education Minister, Dr. Karan Singh, delivered the valedictory address. He called for efforts to see that Hindi was voluntarily accepted by those speaking other languages. All languages were divine gifts and in fact it reflected the beauty and greatness of Indian culture which would assimilate all languages, including English and highlight the essential unity in this diversity.

ISM seminar on corrosion in mines

The Indian School of Mines proposes to organise a two-day seminar on Corrosion in Mines during December this year. The objective of the seminar is to focus attention on the seriousness of the various types of corrosion problems faced by the mining industry and to present the different control measures adopted in minimising the same. The seminar would comprise lectures by eminent corrosion scientists and engineers and would cover the subjects on : (1) Mechanism of corrosion processes; (2) Corrosion of Mining Machinery; (3) Corrosion of wire ropes; (4) Case studies and service failures; and (5) Various protection measures of corrosion.

Other details with regard to the seminar may be obtained from the Coordinator of the seminar.

Character building in education suggested

Mr. Justice V.R. Krishna Iyer of the Supreme Court inaugurated a two-day national seminar on educational change organised by the Akhil Bhartiya Vidyarthi Parishad in New Delhi recently. In his address, Mr. Justice Iyer, called for a rebuilding of the national character. He however regretted that the younger generation had not been brought up on higher values as values had been divorced from education. He appealed to the students and the youth to play their role in national building and to refuse to accept the schemes which do not deal with "cart culture". The education system, he added, should be geared to social transformation.

Shri Kedar Nath Sahni, Chief Executive Councillor of Delhi, who presided over the inaugural function, said that while in the last 32 years there had been lot of discussion on educational change but nothing practical had been done in this regard so far.

Training programme for agricultural management

The Indian Institute of Management, Ahmedabad, conducted a two-week training programme in agriculture management and rural development in Shillong recently under the auspices of the North-Eastern Council. The training which was oriented towards horticulture and plantations, crops, marketing and processing of various perishable produce, laid emphasis on seeking effective solution of the problems of shifting cultivation in the overall agriculture economy of the region.

The State Government officers from the different constituent units of the North-Eastern region dealing with agriculture and allied subjects attended the training programme.

Development of English urged

Addressing the staff and students of Central Institute of

English and Foreign Languages in Hyderabad, the Union Education Minister, Dr. Karan Singh, stressed the imperative need for developing English language on scientific lines as it (English) would remain an integral part of the education system in the country. He regretted that the standard of English teaching had deteriorated and hoped that the Institute could play an important role in this regard.

The Minister pointed out that English had transcended all barriers and had very much become a world heritage. He observed that it was the link language for many more years to come and to give it up would be very much unfortunate.

Medical institute for Kashmir

The Jammu and Kashmir Government proposes to set up a medical institute in the state and would be patterned on lines of the All-India Institute of Medical Sciences. The institute would be the most modern and would be built at an estimated cost of Rs. 21 crores. The government proposes to import most modern medical equipment worth Rs. two crores for various departments like neuro surgery, cancer treatment and cardiovascular treatment. The hospital attached to the institute would have 500 beds for non-paying patients and 100 paying wards. The project is expected to be completed by 1981-82.

Medical Varsity at Andhra

A medical university would soon be established in Andhra Pradesh and the homeopathy, ayurveda and unani systems would be brought under the proposed university. A postgraduate research centre would also be attached to the university.

To start with a 100-bed hospital would be opened on November 1, 1979 at the King Kothi Palace in Hyderabad. The State Government has earmarked a sum of Rs. 25 lakhs for this purpose.

Calcutta scientists evolve new rice varieties

Dr. S.P. Banerjee and Dr. M. Majumdar, scientists in the crop breeding research unit of the Calcutta University have evolved two high yielding rice strains for boro cultivation by crossing Bhutanese variety 'Soka' with the Indian 'Jaya' after three years of extensive lab to land trials. The newly evolved strains are short in duration by 15 to 20 days and have registered 4 to 5 per cent higher yield than that of 'Jaya' and would soon be released to the cultivators.

Three-year medical course in Maharashtra

The Government of Maharashtra has decided to start a three-year short term medical diploma course from the middle of October this year at Dhule, Ratnagiri, Kolhapur, Nanded and Akola. Candidates who have completed their education in rural schools upto 7th standards and have passed higher secondary (i.e. 10+2) examination of the Maharashtra State Board of Secondary and Higher Secondary Education or equivalent examination from the institutions situated in Maharashtra are eligible for admission to this course. Training classes under this scheme will be conducted at the respective district general hospitals.

Islamia institute of technology

The Karnataka Government has permitted the Islamic Mission in India to open the Islamia Institute of Technology from the current academic session. The Institute would have courses in BE Civil and Mechanical Engineering.

PG course in Pharmacology

The Chief Executive Councillor of Delhi has said that a post-graduate course would soon be introduced in Pharmacology College being run by the Delhi Administration. Diploma courses in production technology and a part-time diploma course in phar-

macy for practising pharmacists have also been added to the technical education institution from the current academic session. The CEC said that weightage had been given to rural youth and students belonging to scheduled castes and scheduled tribes in the matter of admission to the technical institutions.

Vocational courses at Andhra proposed

The Andhra Pradesh Government has constituted a committee to examine as to what steps should be taken to make the university courses particularly at the graduate level, vocation-oriented. The Chief Minister of the State, Dr. M. Channa Reddy said that there was a great demand for technical and vocational courses. The Government had also decided to set up two engineering colleges which would be financed by private bodies. One engineering college would be affiliated to Sri Venkateswara University and the other would be located at Hyderabad and would be sponsored by Chaitanya Educational Society.

Refresher course in English

The regional centre of the Central Institute of English and Foreign Languages organised a two-week refresher course in English at Shillong for the teachers of Assam. Delivering the valedictory address Shri S.C. Goswami, Chairman of Assam Board of Secondary Education said that teachers played a key role in effecting any reform in education. He however regretted that the senior teachers who were progressive in thought showed conservatism in practice. In their teaching they followed the methods through which they were taught instead of adopting modern techniques.

Dr. K.J. Joseph, Reader in the Department of Educational Research of the NEHU said that curriculum and teaching should be relevant to the needs of the students. He emphasised the need for the maximum utilisation of all available resources for education.

Stress on right technology

Delivering the convocation address at the Indian Institute of Technology, Madras, Shri V.G. Rajadhyaksha, Member, Planning Commission said that the country should come out of the ruts of traditional thinking in the choice of technologies bearing in mind the constraints of employment, energy and environment. Most of the country's technology problems such as improving farm implements, transportation system and domestic appliances required sophisticated multidisciplinary inputs. But these could not be solved by sitting in the laboratory.

They required our technologists to go out and stay in the field. He suggested that all IIT students could spend one or two semesters studying and carrying out complete projects in a village or a small town. Government and industry, he said, should play their part in fostering such reorientation.

PAU to launch new research schemes

Under its lab-to-land programme, the Punjab Agricultural University proposes to launch various new schemes. Under this programme, the farm scientists would approach the ordinary farmers to apprise them of the latest agricultural technology and solve their day-to-day problems. Small and marginal farmers who had very limited resources could considerably increase their income if they adopted the new farm technology.

Inaugurating a new programme at the Regional Rice Research Station at Kapurthala, Dr. J.C. Bakshi, Director of Extension Education of the University said that timely transplantation of paddy seedlings and maintaining optimum plant population i.e. 33 plants per sq. metre was a key to successful paddy cultivation. Application of fertilizers, control of weeds through effective chemicals and adoption of plant protection measures against certain diseases could increase the per acre yield of paddy to the extent of 50 per cent.

British Council library at Hyderabad

Under an agreement with the Government of India, the British Council has opened a library in Hyderabad recently. The library will be run under the administrative control of Indian Council of the Cultural Relations but would receive financial and professional support from the British Council. This would be in addition to other centres located at Lucknow, Bangalore, Trivandrum, Poona, Bhopal, Patna and Ranchi.

The library will have an initial stock of 10,000 books and 90 periodicals and will cater mainly for adult readers—especially those in professions, civil servants, students and those engaged in developmental work.

The British Council has already opened four regional libraries at Delhi, Calcutta, Bombay and Madras which provide inter-library loan services as well as professional staff support to all the British libraries.

Need to develop population education

The national conference on planning and development of population education programme in adult education held recently at the Sri Venkateswara University has recommended that steps should be taken to develop population education content in the curriculum for the national adult education programme. It underlined the need for identification and development of human, material and institutional resources in the field of population education and urged that the population education cell of the Directorate of Adult Education should be further strengthened for better coordination. The component of population education should be well integrated in the follow-up programmes of the NAEP. It also stressed the need to prepare a handbook on population education for the benefit of adult education workers at the field level.

HAU starts adult education centre

The Haryana Agricultural University has opened an adult education centre and is being run by the students and teachers of Home Science College of the University. At the centre women are given lessons about hygiene, sanitation, house-keeping, cooking, sewing and stitching. About 68 women have been attending the classes.

Short-term course at ISM

Under its Executive Development Programme, the Indian School of Mines, proposes to organise a short-term course on Modern Trends in Ceramic Engineering from November 5 to 10, 1979. The course has been designed to assist and help in training the personnel employed not only in the refractory industry but also engineers/technical personnel engaged in designing, maintenance of equipment in allied industries involving newer ceramic materials and technology by providing them with the theoretical basis for understanding the different unit operations in refractory manufacture.

The course will cover wide ranging topics from raw material to letter production techniques.

Indian scientists to visit cotton research stations abroad

An Indian delegation of cotton scientists would soon be visiting Cotton Research Stations located in Sudan, Peru, U.K. and USA. The delegation would also visit advanced research centres in the American Cotton Belt in the States of California, Phoenix, New Mexico, Texas, Mississippi, Tennessee and would hold discussions with experts of the US Department of Agriculture and scientists engaged in cotton research.

The Indian Council of Agricultural Research has nominated Dr. T.H. Singh, Head of the Department of Plant Breeding of the Punjab Agricultural University as leader of the Indian delegation.

Unesco seminar on education

The Regional Office of Science and Technology for South and Central Asia (ROSTSCA) of the Unesco would organise a regional seminar on education and training of technicians at the Bangladesh University of Engineering and Technology from November 26 to 30, 1979. The seminar will be held in cooperation with the Association for Engineering Education in South and Central Asia.

The seminar will review the national systems, policies and programmes for the education and training of technicians, including prospects and enhancement of the status of technicians, as well as development of regional cooperative programmes. It will also highlight the problems encountered by the member states in the development and improvement of the technicians training programmes, development of specialised training facilities and innovative programmes, in technical teacher training institutions.

The ROSTSCA has been engaged in the promotion and development activities aimed at strengthening the national institutional infrastructure, establishment of regional cooperation in engineering and technological education through the organisation of regional seminars and meetings and specific interest and relevance to the countries of the region, award of travel and study grants to foster inter-institutional and individual links, formation of regional professional societies of engineers and engineering education institutions.

Member States in the region including Afghanistan, Bangladesh, Burma, India, Iran, Mongolia, Nepal, Pakistan and Sri Lanka have been invited to participate in the seminar.

BA special course at Punjabi Varsity

The Punjabi University has started a special BA course of two years' duration for persons intending to join the defence services. The Khalsa College

located at Patiala has been allowed to run the course.

Reservation in BCJ course at Osmania

Under the media personnel category, the Osmania University has reserved two seats in the Bachelor of Communication & Journalism (BCJ) course from the current academic session for the candidates who have put in three years full time paid professional experience in media institutions. Candidates who had already applied for the BCJ course and fulfil the above requirement would also be eligible for admission under this category.

Punjabi Varsity to have regional centre

The Syndicate of the Punjabi University has decided to establish a regional centre of the university at Bhatinda. For this purpose, an eight-member committee under the chairmanship of Dr. Bhagat Singh, D.P.I. (Col-

leges), Punjab, has been constituted. The committee will make recommendations regarding the site of the centre, the estimated expenditure on land and buildings, the subjects to be taught and the staff to be recruited.

Borlaug Award

Dr. M.S. Swaminathan, former Director-General of Indian Council of Agricultural Research, has been awarded the Borlaug Award for 1978 for his outstanding contributions to agricultural research, agricultural education and agricultural development in all its aspects within the country as well as for enhancing the prestige of Indian agricultural science on the international plane.

The Award was instituted by Coromandel Fertilisers in honour of Dr. Norman E. Borlaug's contribution to the wheat revolution and increased production in various parts of the world. It carries a cash award of Rs. 10,000 and a medal.

Asian physical society formed

The first Asian Physical Society has been established and has come into being with effect from the 15th September, 1979. This was a sequel to recommendations made at the Asian Regional Conference on University Physics Education held in May 1977 in Malaysia. In 1978 a draft constitution was circulated by the 'Pro-Tem' Committee to various Physical Societies in Asian countries and the constitution for the Asian Physical Society now adopted has taken into account the reactions received to the draft constitution.

The main objective of the Society is to promote the advancement of Physics and its allied subjects, both in teaching and research, in all the Asian countries. It will also serve as a forum for the discussion of subjects of common interest and for close collaboration between various Physics organisations and Societies in the Asian countries.

The Society comprises institutional members (representing their countries' physics associations), individual members from among

the scientists and corporate members from research laboratories and scientific companies.

The Society proposes to organise workshops, symposia, seminars and conferences on various topics of Physics education in different parts of Asia during the course of the next three years. It also proposes to publish a News Bulletin and a Journal in due course. The first Executive Committee unanimously elected Prof. Chatar Singh of Malaysia as President and Prof. B. Ramachandra Rao, Vice-Chairman of the University Grants Commission, New Delhi and Prof. M. Barnawi of Indonesia as Vice-Presidents. Dr. S. Radhakrishna, COSTED Scientific Secretary, India, was unanimously elected as the Executive Secretary. Other members of the Executive Committee included the Treasurer and seven other members, one each from Singapore, Thailand, Bangladesh, Pakistan, Hong Kong, Sri Lanka, Philippines and Japan. All of them will hold office for a period of three years.

Conferences, Seminars & Workshops

October-December, 1979

Date	Subject	Venue	Sponsoring Body
Sep-/Oct. '79	Seminar on reliability of heavy electrical equipment	Bangalore	Instn of Engineers (India)
Sep '79/Jan 80	Diamond Jubilee Celebrations of the Institutions of Engineers	New Delhi	Institution of Engineers
1 Oct-11 Oct	Workshop of New techniques in neurosciences with special reference to neurophysiology of higher nervous activity	Bangalore	Nat. Inst of Mental Health and Neurosciences
2 Oct-11 Oct	Management of R & D Systems	Hyderabad	Admin. Staff College
2 Oct-13 Oct	Course on advanced computer systems	Hyderabad	Admin Staff College
5 Oct 1979	Seminar on capital formation in Indian engineering industries: the case of multinationals	Delhi	Inst of Economic Growth
8 Oct-10 Oct	Application of colorimetric methods for rapid chemical analysis in cement plants	Ballabgarh	Cement Research Institute
13 Oct-14 Oct	Analysis of synthesis of mechanisms	Bombay	I.I.T.
15 Oct-17 Oct	Hydraulic mining: a seminar	Dhanbad	Indian School of Mines
19 Oct 1979	Workshop on Urban Labour Market: a case study of Delhi	Delhi	Inst of Economic Growth
23 Oct-20 Nov	Hospital administration course	Delhi	Nat Inst of Health and Family Welfare
27 Oct-28 Oct	Industrial hydraulics and hydraulic controls	Bombay	I.I.T.
27 Oct-30 Oct	Seminar on time change and causality in Indian Philosophy	Tirupati	Sri Venkateswara University
29 Oct- 3 Nov	Management of Education systems	Hyderabad	Admin. Staff College
29 Oct-16 Nov	Workshop of family planning	New Delhi	Family Planning Foundation and Nat Inst of Design
October 1979	Seminar on Research Promotion and innovations in evaluation and methodology in physical education	Gwalior	Lakshmi Bai National College of Physical Education
October 1979	Symposium on Sintering products	Bombay	Dept of Atomic Energy, Bhabha Atomic Research Centre
October 1979	Workshop on scientific and technical manpower for R and D	Hyderabad	Dept of Science and Technology and Institution of Engineers
October 1979	Workshop on Social Dimension of Science and Technology	Shillong	N E. Hill University
31 Oct- 2 Nov	Seminar on the impact of Islam on the West	Aligarh	A.M.U., Dept of Islamic Studies
3 Nov- 4 Nov	Analysis and design of machine foundations	Bombay	I.I.T.
4 Nov- 7 Nov	Ayurvedic Research Seminar	Jamnagar	Gujarat Ayurved Univ., Jamnagar
5 Nov- 7 Nov	Design of concrete structures for storage of water and other aqueous liquids	Ballabgarh	Cement Research Institute
5 Nov-10 Nov	Project Management	Hyderabad	Admin. Staff College
5 Nov-10 Nov	Workshop on passenger safety	Pune	Central Inst of Road Transport
5 Nov-30 Nov	Training course on information storage and retrieval for health and family welfare	Delhi	Nat. Documentation Centre
5 Nov-30 Nov	Unit processes in waste water treatment	Nagpur	National Environmental Engg Research Institute
9 Nov 1979	Workshop on analysis of input use in East U.P. farms	Delhi	Inst of Economic Growth
10 Nov-11 Nov	Organisation and management of health services in rural areas	Bombay	I.I.T.
17 Nov-18 Nov	Symposium on head injury and neuro-otology	Chandigarh	PG Inst of Med Education and Neuro-Otological and Equilibrium Society of India
18 Nov-22 Nov	International group discussion/symposium on geology.	Bombay	I.I.T.
18 Nov-23 Nov	2nd National workshop in atomic and molecular physics	Santiniketan	Visva-Bharati
19 Nov-24 Nov	Workshop on corporate image building	Pune	Central Inst of Road Transport
19 Nov-30 Nov	Winter School on Electron paramagnetic resonance	Bombay	I.I.T.
22 Nov-29 Nov	11th Course in materials management	Delhi	Nat Inst of Health and Family Welfare
24 Nov-25 Nov	Switchgear principles and high voltage testing	Bombay	I.I.T.
26 Nov- 1 Dec	Mine safety Management	Dhanbad	Indian School of Mines
30 Nov 1979	Seminar on exchange rate policies in developing countries	Delhi	Inst of Economic Growth
Nov. 15 (days)	Advances in irrigation systems	Hyderabad	Institution of Engineers
3 Dec- 5 Dec	Corrosion in mines: a seminar	Dhanbad	Indian School of Mines
4 Dec- 8 Dec	4th Asian Cancer conference	Bombay	Tata Memorial Centre and India Cancer Society
4 Dec-15 Dec	Management of human resources	Hyderabad	Admin. Staff College

Date	Subject	Venue	Sponsoring Body
5 Dec- 7 Dec	6th Nat. Conference on I.C. engines and combustion	Bombay	I.I.T.
5 Dec-14 Dec	Workshop on restructuring the syllabus in English	Tirupati	Sri Padmavathi Women's College
10 Dec-15 Dec	Production Management	Ahmedabad	Nat. Productivity Council
13 Dec-14 Dec	National Solar energy convention, 1979	Bombay	Solar Energy Society of India
13 Dec-15 Dec	National seminar on fertiliser marketing and use	New Delhi	Fertiliser Assn of India
13 Dec-15 Dec	23rd Technical convention of I.E.T.E.	Delhi	Inst of Electronic and Telecom Engrs
14 December 79	Seminar on how accurate is the census count? An analysis of the 1951, 1961 and 1971 check.	Delhi	Inst of Economic Growth
18 Dec-20 Dec	Planning for electrical energy	Hyderabad	Admin. Staff College
19 Dec-22 Dec	International Conference on Development and Behaviour of Drosophila	Bombay	Tata Inst for Fundamental Research
22 Dec-25 Dec	32nd annual session of Indian Institute of Chemical Engineers	Bombay	Indian Inst of Chemical Engineers
27 Dec-29 Dec	Technological forecasting	Hyderabad	Admin. Staff College
28 December 79	Workshop on capital intensity and productivity in small scale manufacturing industry	Delhi	Inst of Economic Growth
28 Dec-30 Dec	28th Annual conference of the Anatomical Society of India	Bombay	Anatomical Society of India
Dec.'79(15 days)	Modern power station operation	Hyderabad	Institution of Engineers
December 1979	2nd National Conference on Corrosion and its control	Calcutta	Society for the Advancement of Electro-chemical Sc and Technology

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Agriculture			
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Computers			
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Economics			
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Engineering-General			
3 Nov- 4 Nov	Analysis and design of machine foundations	Bombay	I.I.T.
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Transport			
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Water Treatment			
5 Nov- 7 Nov	Design of concrete structures for storage of water and other aqueous liquids	Ballabgarh	Cement Research Institute
5 Nov-30 Nov	Unit processes in waste water treatment	Nagpur	National Environmental Engineering Research Institute

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4. Janak Singh. Hinduon mein sahisnuta aur Muslim alapsankhyakon ke prati drishtikon. (Hindi) Kashi Vidyapith.
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9. Sharan, Raka. Embourgeoisement among the working class women workers: A study of the industrial and the non-industrial women workers of Kanpur. Indian Institute of Technology, Kanpur.
10. Singh, Dharamnath. Anusuchit jatiyon mein swatantrata ke bad samajik evam arthik parivartan: Azamgarh Janpad ke prasang mein. (Hindi) Kashi Vidyapith.
11. Vagchi, Aimee. Hindu sanskaron ka badalta hua pratiman: Ek samajshastriya adhyayan. (Hindi) Kashi Vidyapith.

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 2. Khan, Mohammad Iqbal. District administration in Madhya Pradesh. Bhopal Vishwavidyalaya.
 3. Mishra, Patita Paban. Problem of Laos: Its international dimensions since the Geneva Conference. Jawaharlal Nehru University.
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 4. Hajra, Santana. Theory and practice of commercial policy: an evaluation of Indian experience 1923-70. University of Calcutta.
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4. Gupta, Saroj. Swatantrayottar Hindi kahani mein vichar-tattwa. University of Delhi.

5. Mehboob, Abdul Aziz. Vejiuuddin Vajdi aur unkee kavya sadhana. University of Poona.

6. Mehrotra, Baldev Prasad. Katha shilpi Nirala : Sandarb aur drishti. Kashi Vidyapith.

7. Mishra, Vinodlata. Bhojpuri lokgeeton mein nari ke vividh rup. Kashi Vidyapith.

8. Pandey, Triloki Nath. Chhayavadi kavya mein parampara aur prayog ka antarvirodh. Kashi Vidyapith.

9. Ramachandran Nair, J. Satire in modern Hindi poetry. University of Cochin.

10. Shah, Madhuri Maganlal. Kamleshwar ka katha sahitya. Marathwada University.

11. Shrivastava, Nilam. Ambika Datt Vyas: Jiwan aur sahitya. Kashi Vidyapith.

12. Shrotriya, Badrinarayan Dhularam. Bhakti kaleen Bhakt kaviyon ke soundarya bhavana : Sur tatha Tulsi ke sandarb mein. Marathwada University.

13. Singh, Vijay Pratap. Chhayavadi kaviyon ke kavya mein rahasyavad. Kashi Vidyapith.

14. Sud, Suman. Hindi aur Gujarati Upanyason mein Gandhi-Vichardhara. University of Delhi.

15. Tripathi, Anritlal. Sufi premakhyanak kavya parampara aur Manjhan krit Madhumalati : Kavyagat vivechan. Kashi Vidyapith.

16. Tripathi, Kamla Prasad. Chhayavadottar kavya mein rashtriya chetana ka swarup. Kashi Vidyapith.

17. Tripathi, Shobnath. Pragativadi samiksha : Manyatayen evam prayog. Kashi Vidyapith.

18. Verma, Manju. Madhyakaleen pramukh sant kaviyon evam Jain dharmi kaviyon ka tulnakmak adhyayan. Kashi Vidyapith.

19. Yadav, Bhagwan Dev. Nirala kavya ka vastu tatwa. Kashi Vidyapith.

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1. Basu, Jyotsna. Parasuramer Galpa : Manabaisista shilparup-o-bhashariti. University of Calcutta.

2. Dutta, Asa. Banga sahitye sahitya chintar dhara. Visva-Bharati

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5. Sen, Bidyutkumar. Unabinsa satabdir Bangla naksha sahitya, 1801-1875. University of Calcutta.

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Marathi

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3. Kamatkar, Gopal Ramachandra. Vishnushastri Chiplankar yanchya vangamaychaya va karya chikitsik abhyas. University of Poona.

4. Nanal, Vidya. Marathi psychological short stories, 1940-1965. Shreemati Nathibai Damodar Thackersey Women's University, Bombay.

5. Veer, Ramachandra Ganapati. Marathi ckankika: Ek abhyas. University of Poona.

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1. Khan, Rahmat Ali. Parsian literature under Adil Shahi Dynasty, 1489 to 1686 A.D. (A.H. 895 to 1097). University of Delhi

2. Margoob, Ghulam Mohammad. Kashmir ka Farsi adab Shahmiri dour mein. University of Kashmir.

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1. Shanmugam, E. Kotikkalyerrap-p-pattukal of Tanjavur District : A study. University of Madras.

2. Shantha, M.S. A critical study of sivaprakasari's literary works. University of Madras.

3. Sivakamasundari, P. Home science in Tamil literature. University of Madras.

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2. Sowdamini Amma, P. A comprehensive and comparative study on Radha depicted in the works of Krishnit poets in Hindi and Malayalam. University of Kerala.

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1. Siddapa, Hakari Devendrakumar. Gnanapada : Samajika kathana geetegalalli dukhantha nirupane. Karnatak University.

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1. Hanumantha Rao, Kasturi. Nissenka kammanna sivala leela vilasamu : A critical study. Andhra University.

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1. Tripathi, Satchidananda. Urbanization trends in the Orissa coastal plain. Utkal University.

History

1. Bandyopadhyay, Arun Kumar. Agrarian economy of Tamilnadu, 1820-1855. University of Calcutta.

2. Chavan, Kamal K. Maratha murals : Late medieval painting of the Deccan, 1650-1850 A.D. Poona.

3. Lal, Vishvanath Rashtrakut yug : Rajnaitik sanskritik adhyayan (Hindi) Kashi Vidyapith.

4. Mahajan, Shantaram Gajanan. History of the public library movement in Western Maharashtra, 1806-1921. University of Poona.

5. Pandey, Ram Anant. Bharatiya Jansangh : Udbhava evam vikas (Hindi) Kashi Vidyapith.

6. Prakash Chander. Gramcen samaj aur samudaya : Vedic yug se 320 isvi tak (Hindi) Kashi Vidyapith.

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- Lundgren, David C. and Schwab, Mary R. "Impact of college on students: Residential context, relations with parents and peers, and self-esteem." *Youth and Society* 10(3); Mar 79: 227-36.
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- Sandberger, Johann-Ulrich and Lind, Georg. "Outcomes of university education: Some empirical findings on aims and expectations in the Federal Republic of Germany." *Higher Education* 8(2); Mar 79: 179-203.

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- Rudra, K.K. and Rastogi, S.P. "Regional distribution of selected technical educational facilities in India." *Journal of Higher Education* (Delhi) 4(1); Monsoon 78: 23-31.

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 18/79

Applications are invited for the post of Director Professor (Rs. 1500-60-1800-100-2000-125/2-2500) at Vishveshvaranand Vishva Bandhu Institute of Sanskrit and Indological Studies, Panjab University, Hoshiarpur, so as to reach the Registrar, Panjab University, Chandigarh, alongwith postal orders for Rs. 10/- by 22.10.1979. Fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

Qualifications Essential

- (i) A first or high second class Masters' degree in Sanskrit of an Indian University or an equivalent qualification of a foreign University in the subject with bright academic record;
- (ii) Either a Research degree of doctoral standard or published Research work of high standard in journals of repute in the field of Vedic Language and Literature.
- (iii) About 10 years experience of teaching post-graduate classes and/or research in Vedic Language and Literature at a University or a recognised Research Institute and sufficient experience of guiding research at Doctoral level and supervising research projects;

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in the discipline.

Desirable

- (i) Good knowledge of Nirukta Paninian Grammar (Vyakarna).
- (ii) Working knowledge of Avestan, German and French Languages.

Candidates who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees may, however, send their applications on the prescribed proforma, direct to the University. They may route another copy through their Departments. They will be allowed to present themselves for interview only on the production of a 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance and Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23 x 10 cms. and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

MARATHWADA AGRICULTURAL UNIVERSITY PARBHANI (MAHARASHTRA STATE)

Advertisement No. MAU. 2/79

Applications in the prescribed form are invited on or before 12-10-1979 for the following posts in the payscales mentioned against these posts.

Before applying please read carefully

- (1) The candidates who have already applied in response to the Advertisement No. MAU. 2/77 and MAU 1/79 and were fulfilling the terms and conditions and requirements of the post at that time need not apply again.
- (2) The candidates who were not fulfilling the requirements for the posts in advertisement No.

- (3) If a candidate has previously applied for a particular post and now intends to apply for another post by virtue of higher qualifications will be required to apply afresh.
- (4) Inservice candidates may also apply afresh to avoid the risk of late receipt of application by the University in response to previous advertisements.

Sr. No.	Name of the post	Pay-scales of the post
1	2	3
1.	Dean, Faculty of Agriculture	Rs. 1500-60-1800-100-2000-125/2-2500.
2.	Associate Dean & Principal (Home Science)	-do-
3.	Professor of Agril. Economics	-do-
4.	Professor of Anatomy (Vety)	-do-
5.	Professor of Food Science and Tech. (Tech.)	-do-
6.	Professor of Home Science, (Food & Nutrition/Textile & Clothing/Child Development & Family Relationship)	-do-
7.	Associate Professor of Surgery (Vety)	Rs. 1200-50-1300-60-1900.
8.	Associate Professor of Food Engg. (Tech.)	-do-
9.	Associate Prpfessor of Food Microbiology (Tech.)	-do-
10.	Associate Professor of Cereal Tech. (Tech.)	-do-
11.	Associate Professor of Clothing and Textile (Home Science)	-do-
12.	University Engineer	Rs. 1000-50-1500.
13.	Assistant Prof. of Surgery (Vety)	Rs. 700-40-1100-50-1600.
14.	Assistant Prof. of Parasitology (Vety)	-do-
15.	Assistant Prof. of Medicine (Vety)	-do-
16.	Assistant Prof. of Physiology (Vety)	-do-
17.	Assistant Prof. of Anatomy (Vety)	-do-
18.	Assistant Prof. of Animal Nutrition (Vety)	-do-
19.	Assistant Prof. of Microbiology (Vety)	-do-
20.	Assistant Prof. of Home Science, (Textile & Clothing/Home Management/Child Development & Family Relationship/ Food Nutrition/Extension Education)	-do-
21.	Assistant Prof. of Technology, (Food Technology/Food Engineering/Cereal Technology/Food Microbiology)	-do-
22.	Assistant Prof. of Entomology	-do-
23.	Mechanical Engineer	-do-
24.	Comptroller	Rs. 680-40-1000-EB-50-1500
25.	Deputy Engineer	Rs. 600-30-750-EB-40-1150.
26.	Assistant Comptroller/ Assistant Accounts Officer	-do-
27.	Demonstrator (Home Science)	Rs. 500-20-750-25-900.
28.	Farm Superintendent (Cow & Sheep Unit (Vety)	-do-
29.	Agricultural Officer	-do-
30.	Music Teacher (H.S.)	-do-
31.	Meteorological Observer	-do-
32.	Research Assistant (Technology)	-do-
33.	Senior Live Stock Supervisor	-do-
34.	Junior Engineer	Rs. 395-15-500-20-700-25-900 (Higher start to Rs. 425/- for three years Diploma holders. Rs. 500/- for Engineering Graduates).

1	2	3
35.	Stenographer	Rs 395-15-500-20-700-Extn-20-800
36.	Technical Assistant (Library)	Rs 365-15-500-20-600-Extn-20-760
37.	Steno-Typist	Rs 335-15-500-20-580-Extn-20-680
38.	Live Stock Supervisor	Rs 290-10-390-15-465-Extn-15-540
39.	Sub-Overseer	—do—
40.	Senior Mechanic	—do—
41.	Machineman	—do—
42.	Block Maker	—do—
43.	Compounder (Medicine)	—do— (Highr start
		Rs 330/- with Diploma Pharmacy)
44.	Agricultural Assistant	Rs 260-10-390-15-420-Extn-15-495
		(Higher start of Rs. 310/- for Agril. Graduate).
45.	Laboratory Assistant (Home Sci.)	Rs 260-10-390-15-420-Ext-15-495
46.	Junior Clerk/Section Assistant	—do—
47.	Tracer	—do—
48.	Library Assistant	—do—
49.	Reprographic Assistant	—do—
50.	Boiler Assistant	—do—
51.	Compositor	—do—
52.	Montesary Teacher (Home Science)	Rs 200-10-290-15-350

- Age:** (1) For the post at Sr. No. 1 and 2 not more than (40) years.
 (2) For the post at Sr. No. 3 to 26 not more than (30) years.
 (3) For the post at Sr. No. 27 to 52 minimum 18 years, maximum 25 years.

Maximum age limit will be relaxable for all posts by 5 years for candidates belonging to SC/ST/NT/DNT/OBC.

The age limit shall not apply to persons already in service of Central/State Government/this University or any other University/Institute recognised by this University.

Application forms and details regarding qualification etc. for the post at Sr. No. 1 to 26 can be obtained from the Comptroller, Marathwada Agril. University, Parbhani at the cost of Rs. 2/- in the form of Crossed Indian Postal Orders in the name of the Comptroller, Marathwada Agril. University, Parbhani and for these posts applications in the prescribed forms complete in all respect together with Crossed IPO of Rs. 8/- in the name of the Comptroller, MAU, Parbhani as registration fees should reach to the Registrar, MAU, Parbhani latest by 5.00 p.m. on 12-10-79.

Application forms and details regarding qualifications etc. for the post at Sr. No. 27 to 52 can be obtained from the Comptroller, MAU., Parbhani free of cost only for unemployed candidates and should be submitted without registration fees to the Registrar MAU., Parbhani latest by 5.00 p.m. on 12-10-79. Other candidates willing to apply for these posts at Sr. No. (27 to 52) will have to obtain prescribed application forms at the cost of Rs. 2/- in the form of Crossed Indian Postal Orderst in the name of the Comptroller/MAU., Parbhani and should submit without registration fees to the Registrar, MAU., Parbhani latest by 5.00 p.m. on 12.10.79.

Incomplete applications in any form and those received after prescribed time and date will not be considered and no correspondance thereon will be entertained.

Reservation of post for SC/ST/NT/

DNT/OBC etc. is as per Maharashtra State Government rules. Backlog of reserve seats will also be considered.

Request for forms must specify the name and Sr. No. of the post accompanied by self-addressed envelope at least of the size of 23 cm x 10 cm with 55 paise stamp adhered to it. Separate applications shall have to be made for separate posts.

If considered necessary by the University the candidate shall have to appear for personal interview in the University's office at Parbhani at candidate's own cost.

In the event of large number of applications received in response to this advertisement, to avoid inconvenience to all concerned, at the discretion of the Vice-Chancellor, limited number of candidates may only be invited for interview even though others not invited for interview might be satisfying the prescribed minimum qualifications.

Candidates already in service of Central/State Government or any other organisation and those in the service of this University should necessarily apply through proper channel forwarding an advance copy to the undersigned. The advance copy should reach latest by 5.00 p.m. on 12-10-1979. The applications to be received through proper channel should reach latest by 5.00 p.m. on 26.10.1979.

The fact that the posts are advertised does not mean that necessarily all the posts will be filled in.

S. T. Kachwe
REGISTRAR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

Humayunnagar, Hyderabad-500028
Andhra Pradesh

Notification

Applications are invited for the post of Lecturer in the Constituent Colleges of J.N.T. University, Hyderabad in the following faculties:

1. Electrical Engineering;
2. Mechanical Engineering;
3. Electronics and Communication

Engineering.

1. (a) Scale of Pay

Rs. 700-40-1100-50-1600 with D.A. H.R.A., C.C.A. etc. as per State Government Rules;

(b) Age limit

Not more than 30 years as on 1.10.79. the age limit can be relaxed in case of inservice candidates of J.N.T.U. For S.C., S.T. and B.C. candidates the age limit is relaxable by 5 Yrs.

(c) Qualifications

A first class Masters Degree in the concerned subject with consistently good academic record.

(d) Specialisations required

1. Electrical Engg.

Instrumentation or real time control of Power Systems or power systems.

2. Mechanical-Engg.

Machine Design, Foundry Instrumentation.

3. Electronics and Comm Engg.

Micro-waves, Communication systems, Advance Electronics, Computer hardware, Computer Engg., Radar and Micro-wave Engg. Solid State Devices and Circutes, Active network Synthesis, Digital Electronics,

Candidates interested may apply on a plain paper to the Registrar, J.N.T. University, Humayunnagar, Hyderabad-500 028, enclosing a Demand Draft for Rs. 15/- (Rupees 3/- in case of S.C. and S.T. candidates) in favour of Registrar, J.N.T. University, Hyderabad, payable at any of the scheduled banks at Hyderabad, along with the application form so as to reach him on or before 22-10-1979, furnishing the following information:

Post applied for; Name in full (Block Letters); Postal Address to which communications should be sent; Date of birth and Age; whether belonging to S.C./S.T./B.C.; Educational qualifications, Experience (teaching and non-teaching), any other information, signature of candidates.

Note: Persons who are employed should submit their applications through their employer. Persons claiming to belong to S.C./S.T./B.C. should produce the Community Certificate from the appropriate authorities. Late applications will not be entertained.

REGISTRAR

HARYANA AGRICULTURAL UNIVERSITY, HISSAR

Corrigendum

Post No. 30 (Assistant Professor English) of Advertisement No. 5/79 published on 1.9.1979. If suitable candidates for Assistant Professor are not available, the post will be filled up by Teaching Associates in the pay scale of Rs 600-30-750-40-950 with the following qualifications:

- (i) Second class B.A. with English.
- (ii) Second class M.A. in English.

Eligible candidates can apply latest by 12.10.79. Those who applied earlier need not apply again.

REGISTRAR

**OSMANIA UNIVERSITY
HYDERABAD 500 007 (AP)**

Advertisement No. 14/1979

Applications, in the prescribed form, together with the registration fee of Rs. 5/- are invited for the following posts in the University service, so as to reach the undersigned on or before **8.10.1979.**

**Qualifications
Librarian**

Rs. 1100-50-1300-60-1600 (unrevised).

- (i) Good academic record with first or high second class Master's degree in a subject other than Library Science with a Doctorate degree or equivalent published work of high standard and preferably with experience of guiding research and with knowledge experience of Library Services and Management.
- (ii) At least ten years experience of teaching Post-graduate classes and research or research in an independent capacity in an organisation of higher learning and research or in a responsible post in a Library for advanced students and research workers.

**Lecturers in Library Science
Rs. 700-40-1100-50-1600.**

Consistently good academic record with first or high second class M.Lib. Science with 55% (B+) marks in aggregate with at least a second class B.A./B.Sc./B. Com. degree of an Indian University or an examination recognised as equivalent thereto from a recognised University.

OR

Consistently good academic record with first or high second class Masters' Degree with 55% (B+) marks in aggregate with a second class B. Lib. Science degree or one year Post-graduate Diploma in Library Science from an Indian University or an examination recognised as equivalent thereto from a recognised University.

Note: Candidates with experience in a responsible capacity in a recognised library or experience in teaching the subject of Library Science at a University of an affiliated college will be given preference.

Age

Librarian —Not above (50) years
Lecturers in Library Science—Not above (35) years

- (i) Age limit does not apply to the employees of this University.
- (ii) Age relaxation can be considered in deserving cases.

14%, 3% and 25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward Classes respectively only in case of Lecturers.

Application forms can be had from the Director, Department of Publications and University Press, Osmania

University, Hyderabad-500007, Andhra Pradesh on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director, University Press and by sending a self-addressed envelope (11½ x 2½ cms.) duly stamped for ordinary or registered post.

A latest passport size photograph should be affixed on the application form.

**B. Ramachandra Reddy
REGISTRAR**

**THE UNIVERSITY OF
BURDWAN**

**RAJBATI : BURDWAN
WEST BENGAL**

Advertisement No. 5/79-80

Dated, 10th September 1979

Applications in the prescribed form are invited for the following posts in the approved scales of pay (viz. Reader—Rs. 1200-50-1300-60-1900/- and Lecturer—Rs. 700-40-1100-50-1600/-) with allowances and other benefits according to University Rules.

A. Department of Geography

- (i) Reader—One post (lien bound likely to be permanent)
- (ii) Lecturer—Four posts (three permanent and one lien bound likely to be permanent)

B. Department of Law

- (i) Lecturer—Two posts

C. Department of Economics

- (i) Lecturer—One post.

Minimum Qualifications

- (a) A Doctor's Degree or published research work of an equally high standard; and
- (b) **For A and C:** Consistently good academic record with first or high Second Class (B in the seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign University.
For B: Consistently good academic record with first or high Second Class (B in the seven point scale) Masters' Degree in Law or an equivalent degree of a foreign University.

Desirable Qualifications: Specialisation or Proficiency

For A (i) Social Geography

For A (ii): For the three permanent posts of Lecturer

- (a) One post with specialisation in Economic Geography. Special knowledge of Agriculture/Industrial Geography will be considered an additional qualification;
- (b) One post of Lecturer in Geomorphology with specialisation in any one of the following fields:
Cartography / Meteorology /
Climatology / Geology. The

teacher will be required also to take survey classes;

- (c) One post with specialisation in Pedology.

**For the temporary post of
Lecturer**

One post with proficiency in any branch of Geography. Must have a special knowledge of Statistical Methods and Quantitative Techniques for taking classes on Quantitative Geography.

For B (i)

- (a) One post with knowledge and experience in teaching any of the subjects noted below:

Administrative Law, Public Administrations, Legal Remedies, Criminology, Interpretation of Statutes and Principles of Legislation.

- (b) One post with fair knowledge in teaching Rules of Court or any of the above subjects.

For C (i)

Specialisation—Agricultural Economics. Candidates whose field of specialisation is Statistics —Econometrics may also apply.

This is in partial modification of the specialisation indicated in Advertisement No. 3/79-80 dated, the 7th August, 1979 regarding the post of Lecturer in Economics.

The University Council may, on the recommendation of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of applications with the requisite fee of Rs. 5/- is **October 31, 1979.**

**A.K. Chaudhuri
REGISTRAR**

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**PANJAB UNIVERSITY
CHANDIGARH**

Corrigendum to Advertisement No. 17/79

"Advertisement No. 17/79 for the posts of Lecturers in the Directorate of Correspondence Courses, Panjab University, Chandigarh, 15% posts of Lecturers will be reserved for the members of Scheduled Castes and 2% for the members of Scheduled Tribes, but these will be filled up by others if no suitable Scheduled Castes/Scheduled Tribes applicant is available."

**H.L. Sharma
Finance and Development Officer**

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